

**AMENDMENTS TO THE DRAWINGS:**

The attached two (2) replacement sheets of drawings include changes to Figs. 9 and 10. With regard to Fig. 9, the referred-to diode 73 in the detailed description of that drawing illustration is being appropriately labeled in that drawing figure. With regard to Fig. 10 of the drawings, the indicator line referencing numeral 73 is being appropriately changed so that it properly refers to the shown diode.

Attachments:       Two (2) Replacement Sheets directed to Figs. 9 and 10 of the drawings;  
  
                          Annotated sheets showing the changes made to Figs. 9 and 10.

**Remarks:**

Acceptance/formal entry therefor of this preliminarily submitted Amendment prior to the Examiner taking up the above-identified application for a formal review is respectfully requested.

The originally submitted Specification was revised to correct informalities noted therein as well as to improve the readability thereof. The revisions implemented are inclusive of any noted informalities in connection with the previously standing Office Action in the prior, original application in the chain of continuing applications corresponding to the above-referenced application. However, due to the extensiveness of the revisions being implemented in the Specification, applicants, through their undersigned representative, are submitting herewith (as **Attachment A**) a Substitute Specification directed thereto. It is submitted, new matter is not being added with regard to the Substitute Specification, either by addition and/or deletion. Also, since the accompanying Specification (Attachment A) is a voluntary submission by applicants, enclosed herewith, also, is a marked-up copy of the original Specification showing the changes being implemented therein (**Attachment B**). Acceptance therefor of the Substitute Specification as a replacement of the originally submitted Specification is respectfully requested.

Acceptance of the two (2) replacement sheets of drawings, directed to Figs. 9 and 10, is also respectfully requested. The changes made to Figs. 9 and 10 are directed to minor formal matters. Namely, reference numeral 73 was appropriately added to Fig. 9 in connection with correlating the illustrated diode to the related description of Embodiment 4 in the Specification. With regard to Fig. 10 of the drawings, the referencing of numeral 73 was appropriately re-directed to the intended element of that drawing. The referred-to revisions are shown clearly by the

accompanying annotated two (2) drawing sheets showing the changes made. Since these revisions are of an obviously minor correcting nature, acceptance of the two replacement formal sheets of drawings, directed to Figs. 9 and 10, is respectfully requested.

By the amendments presented hereinabove, originally submitted claims 1-11 are being preliminarily substituted with newly presented claims 12-26. The invention covered by new claims 12-26 is directed to a semiconductor power converting apparatus based on the now canceled original claims 1-5 and 11. It is submitted, any previously existing concerns such as with regard to the rejection of the claims under 35 USC §112, second paragraph, in the Office Action of February 12, 2003, in the prior, original application, have been overcome in view of the revisions thereto with regard to the presenting of the new, substitute claims. For example, expressions such as "constructed by connecting" and "owns," previously objected to, as well as others, are no longer being used in the claims. The following brief discussion is directed to the present claimed subject matter.

Newly presented claim 12 is a re-presenting of original claim 1 but without the objected to language therein. Newly presented dependent claim 13 further characterizes the relationship between the individual IGBTs of the series arrangement with respect to the corresponding driver coupled thereto. Various examples of this are given with regard to the disclosed embodiments relating the respective gate circuit (or gate drive) 100 to the IGBT coupled thereto. Dependent claim 14 further characterizes the set-forth "at least one series arrangement of IGBTs" as constituting "plural sets of two series-connected arms, each arm including a respective said series arrangement of IGBTs , ..." such as that shown in the example embodiment in Fig. 4 of the drawings, although not limited thereto. With regard to the example showings in Figs. 1, 5, 6, 7, 8, 9, 10, 11 and 12, the

series connection of IGBTs and corresponding gate circuits coupled thereto, respectively, are example representations of an arm 20 in Fig. 4 of the drawings, although not limited thereto.

New claims 15-18 as well as new claims 19-22 represent a revised version of the invention intended to be covered by original claims 2-4. Newly presented claims 23-25 relate to subject matter intended to be covered by original claim 5 and newly presented claim 26 is a re-presenting of the invention according to claim 11.

The present invention, as now defined according to new claims 12-26, calls for a semiconductor power converting apparatus which prevents over-voltage buildup such as at the collector terminal side of the MOS control semiconductor elements (or devices) such as IGBTs and thereby avoids breakdown of the IGBTs which are series-connected with regard to each of the arms of the power converter. In order to protect against such over-voltage buildup when there is an occurrence of over-current flowing in the power line to which the IGBTs are in series-connection, the invention specifically sets forth a scheme which protects the IGBTs against over-voltage breakdown by causing an increase of the gate voltage in accordance with a change in the collector voltage thereof exceeding a predetermined value. Due to over-current flowing in the power line, the collector current of an IGBT reaches the saturation current level associated with that IGBT, which causes a driver such as gate circuit 100 in the drawings, although not limited thereto, to react to a change in the collector side of the IGBT to cause a corresponding increase in the gate voltage of that IGBT to thereby raise the saturation current value of that IGBT. As can be seen from the characteristic waveforms shown in Fig. 2 of the drawings, when the gate voltage of MOS control semiconductor elements such as IGBTs becomes increased, the saturated current value is also correspondingly increased. An

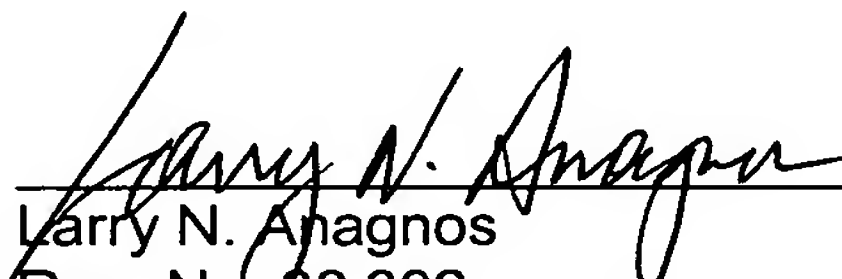
S.N. 10/638,400

example of the present invention such as it relates to the first disclosed embodiment is described on page 11, paragraph [0037], to page 12, paragraph [0040].

Acceptance of this preliminarily submitted amendment as well as examination and favorable action therefor of the above-newly submitted claims 12-26 is respectfully requested.

If any costs are due in connection with the filing of this paper, please charge them to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Dep. Acct. No. 01-2135 (500.41508CX2), and please credit any excess fees to such deposit account.

Respectfully submitted,  
**ANTONELLI, TERRY, STOUT & KRAUS, LLP**

  
Larry N. Anagnos  
Reg. No. 82,392

LNA/dks  
703-312-6600

Attachments: Attachment A - Substitute Specification  
Attachment B - Marked-Up Version Showing Changes Made  
Appendix A - Drawing Replacements sheets for Figs. 9 and 10



FIG. 9

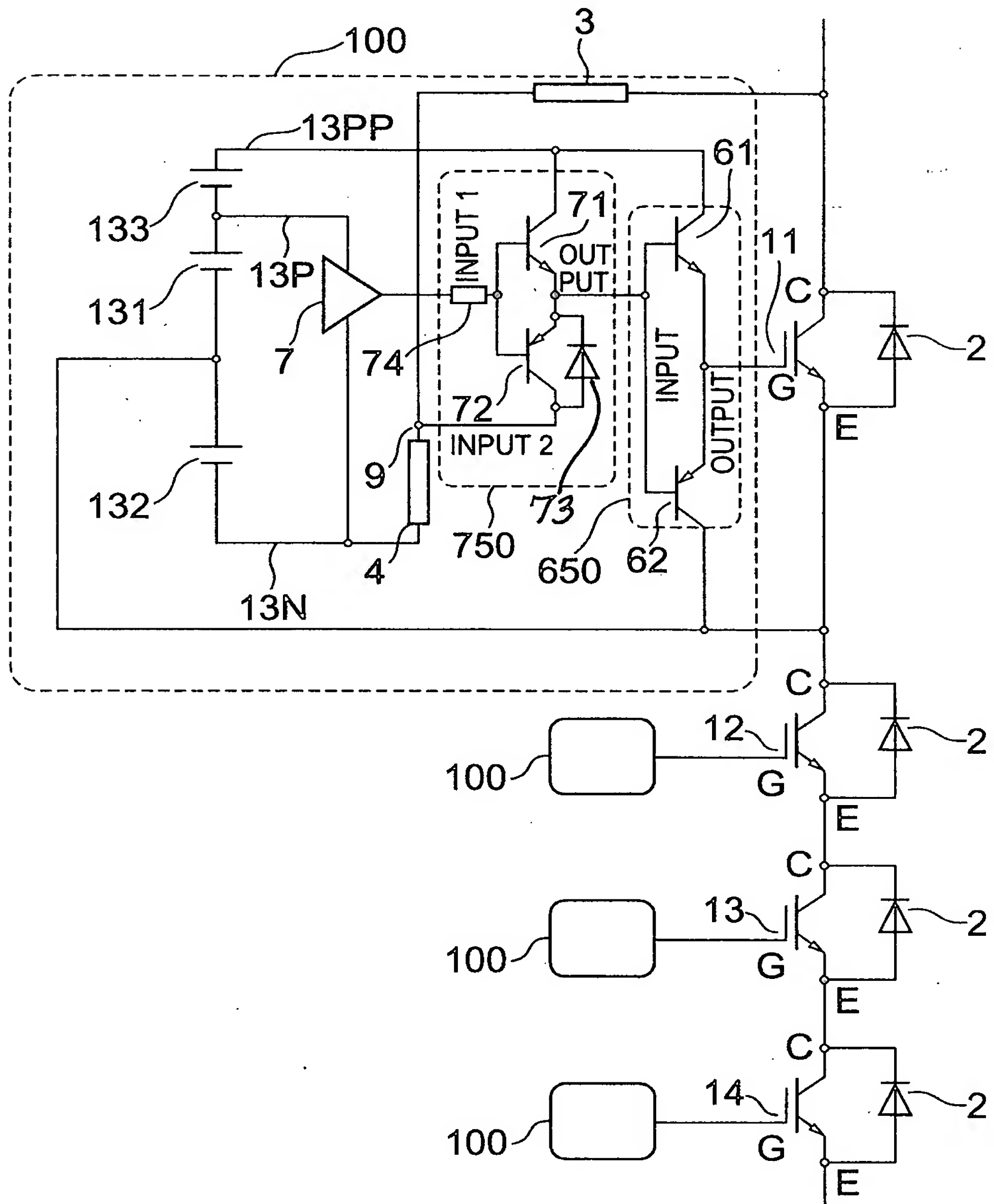


FIG. 10

